

CLAIMS

1. A coating composition capable of forming an alkali-soluble lubricating film, which contains an aqueous polyurethane composition (A) and a lubricating functionality-providing agent (B) at 1-30 wt% with respect to the solid content of said aqueous polyurethane composition, wherein said aqueous polyurethane composition is film-formable and its formed films are alkali-soluble.
2. A coating composition according to claim 1, which further contains silica particles (C) at 1-30 wt% with respect to the solid content of said aqueous polyurethane composition.
3. A coating composition according to claim 1 or 2, wherein the aqueous polyurethane composition (A) comprises a polyester polyol.
4. A coating composition according to claim 1 or 2, wherein the aqueous polyurethane composition (A) contains a carboxyl group or sulfonic acid group or salt thereof as a hydrophilic group.
5. A coating composition according to claim 4, wherein said hydrophilic group of the aqueous polyurethane composition (A) is a Na salt or K salt of a carboxyl group or sulfonic acid group.
6. A coating composition according to claim 5, wherein the carboxyl group or sulfonic acid group is contained in the aqueous polyurethane composition (A) to an acid value in the range of 25-180.
7. A coating composition according to claim 3, wherein the polyester polyol composing the aqueous polyurethane composition (A) is prepared by reacting ethylene glycol with an aliphatic dibasic acid or its dialkyl ester, or a mixture thereof.
8. A coating composition according to any one of claims 1 to 5, wherein the lubricating functionality-providing agent (B) comprises one or more from among polyolefin-based waxes, fluorine-based waxes, paraffin-

based waxes and stearic acid-based waxes.

9. A lubricating surface treated metal article wherein a lubricating film comprising a polyurethane resin (A') and a lubricating functionality-providing agent (B) at 1-30 wt% with respect to said polyurethane resin, is formed on the surface of a metal article, wherein said lubricating film is alkali soluble and the film thickness is 0.5-5 μm .

10. A lubricating surface treated metal article according to claim 9, wherein said lubricating film contains silica particles (C) at 1-30 wt% with respect to said polyurethane resin.

11. A lubricating surface treated metal article according to claim 9 or 10, wherein the polyurethane resin (A') comprises a polyester polyol.

12. A lubricating surface treated metal article according to claim 9 or 10, wherein the polyurethane resin (A') contains a carboxyl group or sulfonic acid group or salt thereof as a hydrophilic group.

13. A lubricating surface treated metal article according to claim 12, wherein said hydrophilic group of the polyurethane resin (A') is a Na salt or K salt of a carboxyl group or sulfonic acid group.

14. A lubricating surface treated metal article according to claim 13, wherein the carboxyl group or sulfonic acid group is contained in the polyurethane resin (A') to an acid value in the range of 25-180.

15. A lubricating surface treated metal article according to claim 11, wherein the polyester polyol composing the polyurethane resin (A') is prepared by reacting ethylene glycol with an aliphatic dibasic acid or its dialkyl ester, or a mixture thereof.

16. A lubricating surface treated metal article according to any one of claims 9 to 14, wherein the lubricating functionality-providing agent (B) comprises one or more from among polyolefin-based waxes, fluorine-based waxes, paraffin-based waxes and stearic acid-based

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Sub 12

Sub 13

waxes.

17. A process for production of metal articles that comprises

5 i) a step of coating the surface of a metal article with a coating composition containing an aqueous polyurethane composition (A) and a lubricating functionality-providing agent (B) at 1-30 wt% with respect to the solid content of said aqueous polyurethane composition (A), said aqueous polyurethane composition
10 being film-formable and the formed film being alkali soluble, to form an alkali-soluble lubricating film,

ii) a step of shape working the metal article surface treated with said alkali-soluble lubricating film, and

15 iii) a step of treating said shape worked metal article with an alkali to remove said alkali-soluble lubricating film.

18. A process according to claim 17, wherein silica particles (C) are also included at 1-30 wt% with respect
20 to the solid content of said aqueous polyurethane composition.

Sub 114 → 19. A process according to claim 17 or 18, wherein the aqueous polyurethane composition (A) comprises a polyester polyol.

25 20. A process according to claim 17 or 18, wherein the aqueous polyurethane composition (A) contains a carboxyl group or sulfonic acid group or salt thereof as a hydrophilic group.

30 21. A process according to claim 20, wherein said hydrophilic group of the aqueous polyurethane composition (A) is a Na salt or K salt of a carboxyl group or sulfonic acid group.

35 22. A process according to claim 21, wherein the carboxyl group or sulfonic acid group is contained in the aqueous polyurethane composition (A) to an acid value in the range of 25-180.

23. A process according to claim 19, wherein the

polyester polyol composing the aqueous polyurethane composition (A) is prepared by reacting ethylene glycol with an aliphatic dibasic acid or its dialkyl ester, or a mixture thereof.

- 5 *Sub A* > 24. A process according to any one of claims 19 to 23, wherein the lubricating functionality-providing agent (B) comprises one or more from among polyolefin-based waxes, fluorine-based waxes, paraffin-based waxes and stearic acid-based waxes.

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